

# On the Wilson Monoid of a Pairwise Balanced Design

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We give a new perspective of the relationship between simple matroids of rank 3 and pairwise balanced designs, connecting Wilson's theorems and tools with the theory of truncated boolean representable simplicial complexes. We also introduce the concept of Wilson monoid  $W(X)$  of a pairwise balanced design  $X$ . We present some general algebraic properties and study in detail the cases of Steiner triple systems up to 19 points, as well as the case where a single block has more than 2 elements.

This is joint work with John Rhodes and Pedro Silva.